

WE CLAIM:

1. A Class-D switching amplifier, comprising:
a first, second, third and fourth switch each having a respective control
5 terminal, a first output terminal disposed between said first switch and said
second switch, and a second output terminal disposed between said third switch
and said fourth switch; and
a control circuit coupled to each said control terminals and pulse and
width modulating (PWM) said four switches such that no voltage differential is
10 generated between said first output terminal and said second output terminal in a
first state of operation for a first predetermined time period.
2. The Class-D amplifier as specified in Claim 1 wherein said control circuit
PWM controls said four switches such that a differential voltage is generated
15 between said first output terminal and said second output terminal in a third state
of operation for a second predetermined time period.
3. The Class-D switching amplifier as specified in Claim 2 wherein a current
delivered to a load connected between said first output terminal and said second
20 output terminal directly corresponds to the differential voltage therebetween.
4. The Class-D switching amplifier as specified in Claim 2 wherein the ratio
of the first predetermined time period to the second predetermined time period is
correlated to the voltage potential generated between the first and second output
25 terminals.

5. The Class-D switching amplifier as specified in Claim 2 wherein the control circuit PWM controls said four switches in a second state generating no said voltage differential between said first output terminal and said second output terminal, and a fourth state generating a voltage differential between said first output terminal and said second output terminal, said switches being controlled differently in said first state than said third state, and said switches being controlled differently in said second state than said fourth state.

6. The Class-D switching amplifier as specified in Claim 4 wherein the average voltage provided across the first and second output terminals is a function of the ratio of the first predetermined time period to the second predetermined time period.

7. The Class-D switching amplifier as specified in Claim 2 further comprising a load coupled between said first and second output terminals.

8. The Class-D switching amplifier as specified in Claim 7 wherein said load has an inductive component.

9. The Class-D switching amplifier as specified in Claim 8 wherein said load is inductive.

10. The Class-D switching amplifier as specified in Claim 1 wherein the first and second switch are coupled in series between a first voltage potential and a second voltage potential, and said third switch and said fourth switch are coupled in series between said first voltage potential and said second voltage potential.

11. A Class-D switching amplifier, comprising:

a first switch and a second switch coupled in series between a first voltage potential and a second voltage potential, a third switch and a fourth switch coupled in series between said first voltage potential and said second voltage potential, a first output terminal defined between said first and second switches, a second output terminal defined between said third and fourth switches, each said switch having a control terminal; and

a control circuit coupled to each said control terminals pulse width modulating (PWM) said four switches such that no voltage differential is generated between said first output terminal and said second output terminal in a first state of operation for a first predetermined time period.

12. The Class-D switching amplifier as specified in Claim 11 wherein said control circuit PWM controls said four switches such that a differential voltage is generated between said first output terminal and said second output terminal in a second state of operation for a second predetermined time period.

13. The Class-D switching amplifier as specified in Claim 12 wherein a current delivered to a load connected between said first output terminal and said second output terminal directly corresponds to the differential voltage therebetween.

14. The Class-D switching amplifier as specified in Claim 12 wherein the ratio of the first predetermined time period to the second predetermined time period is correlated to the voltage potential generated between the first and second output terminals.

15. The Class-D switching amplifier as specified in Claim 12 wherein the control circuit PWM controls said four switches in a second state generating no said voltage differential between said first and second output terminals, and a fourth state generating a voltage differential between said first and second output terminals, said switches being controlled differently in said first state than said second state, and being controlled differently in said third state than said fourth state.

16. The Class-D switching amplifier as specified in Claim 14 wherein the average voltage provided across the first and second output terminals is a function of the ratio of the first predetermined time period to the second predetermined time period.

17. The Class-D switching amplifier as specified in Claim 12 further comprising a load coupled between said first and second output terminals.

18. The Class-D switching amplifier as specified in Claim 17 wherein said load has an inductive component.

19. The Class-D switching amplifier as specified in Claim 18 wherein said load is inductive.

20. The Class-D switching amplifier as specified in Claim 18 wherein the second voltage potential is ground and the first voltage potential is positive with respect to ground.